

L. L. NARAYANA* & Digamber RAO*: **Contributions
to the floral anatomy of Humiriaceae 5****

L. L. ナラヤナ*・D. ラオ*: Humiriaceae の花部解剖学的研究 5**

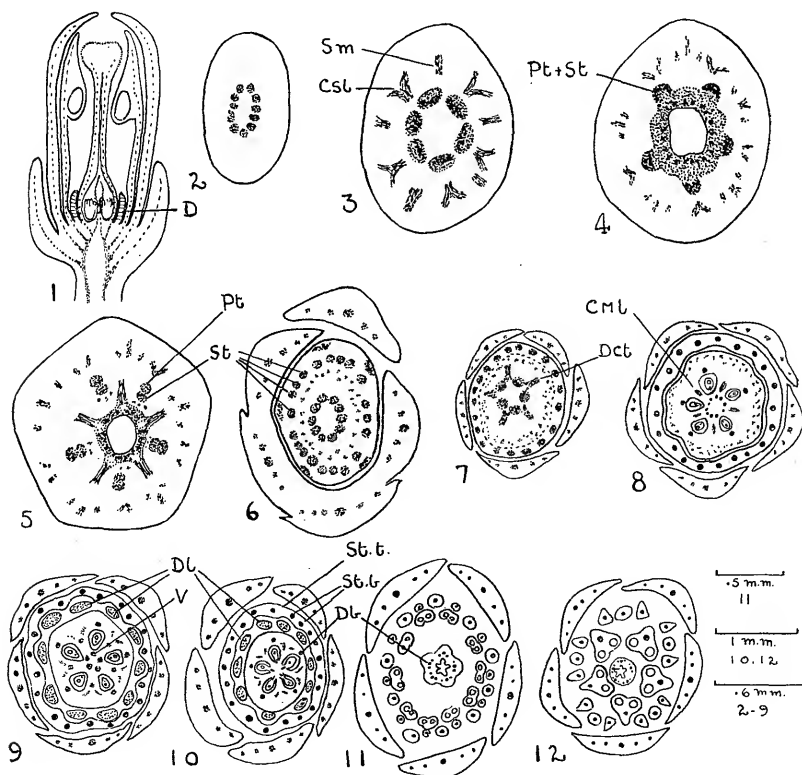
Earlier publications on the floral anatomy of Humiriaceae were by Rao & Narayana (1965), Narayana & Rao (1969, 1973a, 1973b, 1975) and the present paper, the fifth in the series, deals with the floral morphology and vascular anatomy of *Schistostemon dichotomum* (Urban) Cuatr.

Morphology of the flower The flower is pedicellate, pentacyclic, pentamerous, heterochlamydeous, regular, bisexual and hypogynous (Figs. 1, 6, 8). The quincuncial sepals are basally connate (Fig. 6) and the free petals show imbricate aestivation (Figs. 8, 10-12). The androecium consists of twenty stamens; of which the five median stamens belonging to the antisepalous whorl are the longest; the stamens on their either sides are the shortest and the antipetalous stamens are of intermediate height (Figs. 11, 12). The anthers are dorsifixed and introrse with only two fertile loculi on the inner side (Figs. 1, 11, 12). The sterile part of the anther is prolonged into a vascularised appendage (Fig. 1). There is a 10-lobed, intrastaminal, vascularised disc adnate to the ovary wall (Figs. 1, 8, 9). The lobes of the disc separate from the ovary at about the middle region and extend almost to its top (Figs. 1, 9, 10). The ovary is 5-carpellary, syncarpous, 5-locular at the base and unilocular above (Figs. 8-10) with a pendulous, anatropous, bitegmatic ovule in each loculus (Fig. 1). The common style shows a star shaped stylar canal lined by transmitting tissue (Figs. 1, 11, 12). The 5-lobed stigma is covered by glandular hairs (Fig. 1).

Floral anatomy The pedicel shows a ring of vascular bundles (Fig. 2). The sepal midribs and common sepal lateral traces arise in close alternating whorls (Fig. 3). A little higher five traces are organised along the radii of sepal laterals (Fig. 4). These are the conjoint petal-stamen traces (Figs. 4, 5). After reaching the periphery, these traces divide

* Department of Botany, Post-Graduate Centre, P. O. Vidyaranya-puri-506009, Warangal, A. P., India.

** Continued from Journ. Jap. Bot. 51: 12-15 (1976).



Figs. 1-12. *Schistostemon dichotomum*. 1. Diagrammatic L. S. of the flower showing the course of the vascular bundles in the different floral parts. 2-12. Serial transverse sections of flower showing the origin and distribution of the traces to the different floral parts. For explanation see text. D=Disc, Sm=Sepal midrib, Csl=Common sepal laterals, Pt+St=Petal+Stamen traces, Pt=Petal trace, St=Staminal trace, Cml=Common median laterals, Dct=Dorsal carpellary traces, Dl=Disc lobes, V=Ventrols, St. t=Staminal tube, St. b=Staminal bundle, Db=Dorsal bundle.

tangentially demarcating the petal and staminal traces on the outside and inside respectively (Fig. 5). At about this level the antisepalous staminal traces arise from the main stele (Fig. 5). Each of these divides to form three traces (Fig. 6). At this level there are five staminal traces along the petal radii and fifteen traces arranged in five groups of three each, on the sepal radii (Fig. 6). The staminal traces give rise to numerous branches on their inner side before entering the staminal tube (Figs. 5-7). These

branches fade away at the base of the disc (Figs. 7, 8). Next, five dorsal carpellary traces and five common median laterals arise along the sepal and petal radii respectively (Figs. 7, 8). The latter gives branches into the ovary wall (Figs. 9, 10) which in turn extend further for some distance. The remaining stele organises into give pairs of bundles along the sepal radii (Fig. 8). These fuse to form the common ventral bundles (Fig. 9). The inversely oriented ventral bundles are completely utilised in the ovular supply (Figs. 1, 9, 10). The dorsal carpellary bundles as they extend into the style (Figs. 1, 11, 12) branch into three (Figs. 11, 12) and these bundles in turn finally terminate near the base of stigma. The smaller bundles in the ovary wall end towards the top of the ovary (Figs. 10, 11).

Summary and conclusions The flower is regular, pentacyclic, pentamerous, bisexual and hypogynous. The basally connate, quincuncial sepals are three traced and show connation between lateral traces of adjacent sepals. The free, imbricate petals are single traced. The petal traces show adnation with the antipetalous staminal traces. Judging from the origin of staminal traces, the androecium can be described as obdiplostemonous. The ten lobed intrastaminal disc is vascularised by the branches from the staminal traces. The carpels are 5-traced with inversely oriented common ventral bundles on sepal radii. The placentation is anatomically parietal. The dorsal carpellary bundles continue in the semi-solid style and terminate at the base of the stigmatic lobes.

Acknowledgements We are grateful to Prof. U.B.S. Swami for encouragement. Our sincere thanks are due to Dr. K. Subramanyam for criticism and advice. Grateful thanks are also due to Dr. J. C. Lindeman for kindly sending the material for study.

Literature cited

- Narayana, L. L. & D. Rao 1969. Contributions to the floral anatomy of Humiriaceae 1. J. Jap. Bot. 44(11): 328-335. — & — 1973a. Ditto 2. Ibid. 48(5): 143-146. — & — 1973b. Ditto 3. Ibid. 48(8): 242-246. — & — 1975. Ditto 4. Ibid. 51(1): 12-15. Rao, D. & Narayana, L. L. 1965. Vascular anatomy of Humiriaceae Curr. Sci. 34(12): 383-384.

* * * *

Schistostemon dichotomum (Humiriaceae) の花を解剖学的に観察した。